

DART
AEROSPACEDart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

D119-646-041
Job Sheet 174918**Part No:** D119-646-041**Job Qty:** 1 ea**Part Name:** AW119 Replacement Skidtube with Wearpads - Fits LH or RH**Part Weight:** 0 lbs**Status:** Scheduled**Priority:** Medium**Job Created:** 3/23/18**Job Tracking No:****Due Date:** 6/27/18**Created By:** Michelle Gagnon-Donovan**Type:** SOLD**Description:****Note:** DWG IIN-D119-646 REV D, D3887-041 REV E SHEETS 1,2,5,7,8,10,11 IPP RevA: New issue DD verified by:EC IPP rev B 10.02.22 per PAR 09-043 EC verified by:DD IPP REVC 12.11.05 (DEOD3887-B-1)(ecn 12-675) DD verf:JLM IPP REV:D 13.03.20 per chg003 ECN13-534 DD verf:JLM IPP REV:E 17.05.19 as per dwg D3887 rev.e DD verf:JFS**Ship Via:****Bill of Materials****DART**
AEROSPACE**Container No:** S059861**Part:** D119-646-041**Job No:** 174918**Serial No/Batch:** S059861**Revision:****Inspector:****Date:** 04/11/18Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com**SCRAP**

Job Routing									
Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea		6/26/18	0.00	0.00	Start Up Skidtubes-1		J.Y
110	Skidtubes	1 pcs		6/26/18	0.00	0.25	Skidtubes-1		J.Y
120	HandFinish	1 pcs		6/26/18	0.00	0.83	HandFinish1		SA 18-04-17
121	QC	1 pcs		6/26/18	0.00	0.00	QC7-1		JK
122	QC	1 pcs		6/26/18	0.00	0.00	QC5		JK
130	Skidtubes	1 pcs		6/26/18	0.00	1.54	Skidtubes-1		JK
135	QC	1 pcs		6/26/18	0.00	0.00	QC5		
140	Skidtubes	1 pcs		6/26/18	0.00	1.47	Skidtubes-1		MCL J.Y
150	QC	1 pcs		6/26/18	0.00	0.00	QC5		
160	Skidtubes	1 pcs		6/26/18	0.00	1.61	Skidtubes-1		
170	QC	1 pcs		6/26/18	0.00	0.00	QC5		
180	QC	1 pcs		6/26/18	0.00	0.00	QC10		
190	HandFinish	1 pcs		6/26/18	0.00	0.83	HandFinish2		
200	Powdercoat	1 pcs		6/26/18	0.00	0.22	Powdercoat1		
210	QC	1 pcs		6/26/18	0.00	0.00	QC3		
220	HandFinish	1 pcs		6/26/18	0.00	3.83	HandFinish4		
240	HandFinish	1 pcs		6/27/18	0.00	2.00	HandFinish4		
245	QC	1 pcs		6/27/18	0.00	0.00	QC5		
255	DC	1 pcs		6/27/18	0.00	0.00	DC		
260	Packaging	1 pcs		6/27/18	0.00	0.00	Packaging3-1		
270	QC21-FG	1 Ea		6/27/18	0.00	0.00	QC21		

Part Op 110 - 1- inspect Mat'L D2500-1-190 for damage 2-Cut tube to length as per dwg D3887 (154.8") 3- Ensure squareness of

Descriptions: ends and scribe batch#

130 - 1- Install drill Jlg DT9477 drill X-bolt spacer pilot holes using 3/16" drill first side only. 2- 2nd side, locating from first saddle holes use DT9861 A/B to drill 2nd side fwd saddle holes. 3- 2nd side locating from fwd saddle drill remaining crossbolt spacer holes usin DT9477 4- Open crossbolt spacer holes to finished size as per dwg D3887 (section D-D and E-E) ***DO NOT OPEN FWD Saddles Holes*** 5- Deburr, blow out chips from inside of tube. 6- Bond web in place as per Dwg D3887 & QSI 015. A/R 136787 2018/04/22

140 - 1- Bend FWD end of tube using bender 1 and FOLIO 31 bend prog. D3887.***Must use bending aid DT9544, ensure proper positioning*** 2- Cut FWD end of tube as per dwg D3887.***Verify measurment*** 3- Buff out marks left from bending 4- Drill FWD cap holes using DT8215. Open FWD & AFT cap holes to 0.208" 5- Open FWD saddle holes to finished size as per dwg D3887 6- Drill FWD x-bolt spacer holes using DT9816 and open to finished size.(verify measurement) 7- Drill Tow ring hole, using DT10047 locate from FWD saddle hole. (verify neasurement). Open to finished size. 8- Drill 1.87" and 3.74 holes using DT10045 A&B locate from FWD saddle hole. (verify measurement) as per dwg. 9- C'sink FWD cap hole as per detail "C" 10- Drill holes for wearpads using DT8931, open to 0.297". 11- Countersink crossbolt spacer holes, and prepare tube for welding, deburr. 12- Deburr and blow out chips from inside of tube.

160 - NOTE:TACK IN 2 MOST FWD X-BOLT SPACERS AND TEST FIT FWD GROUND HANDELING FIXTURE,IF FIXTURE FITS WELL THEN PROCEED. FIXTURE DT10091. 1-Insert crossbolt spacers. Weld as per QSI 004 and Dwg D3887. Remember to back drill each hole before welding the other side. Use aluminum rod A/R 2-Grind cross bolt welds flush as per Dwg D3887. Ensure no pin hole. 3-Counterbore 5/16" x 0.750" deep as per Dwg D3887. 4- Deburr & Scribe batch # on Aft end of tube.

170 - TEST FIT USING FIXTURE DT10091.

190 - Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.

200 - ***MASK AREA SHOWN ON SHEET 7, NOTE 9*** START TIME: _____ OVEN TEMPERATURE: _____ FINISH TIME: _____

220 - 1-Install inserts as per Dwg D3887.

240 - 1-Install inserts as per Dwg D3887. 2-Install wearpads, gaskets as per Dwg D3887. Put sikaflex in insert before installing bolts and washers A/R Sikaflex-240/-291 _____ Sikaflex expire date: _____ 3-assemble o'ring to plug as per dwg D3492 and apply o'ring lube A/R 55-o'ring lube batch: _____ 4 -Inspect for foreign objects as per QSI 024 5 -Install D2855-3 Cap and seal with Sikaflex. Clean excess adhesive. A/R Sikaflex-240/-291 _____ Sikaflex expire date: _____ 6 -Install insert in D2855- Cap. Install cap and seal with Sikaflex. Clean excess adhesive. A/R Sikaflex-240/-291 _____ Sikaflex expire date: _____ 7- Wing Walk as per dwg and QSI Batch: _____

255 - Photocopy bluefile & type labels per PPP D119-646-041 CHG004

P.T.O.



DQA: _____ Date: mid 18 June 2019

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: <u>174918</u>		DISPOSITION		AGAINST DEPARTMENT/PROCESS				Engineering Quality Other		
Part No. <u>D119-646-041</u>		☐ Rework ☒ Scrap ☐ Use-as-is		☒ Skid-tube Machining ☐ Thermoforming Large Fab		☐ Cross tube Small Fab ☐ Finishing Composite		☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging Supplier		☐
NCR No. <u>19-7176</u>										
Date: <u>15-05-10</u>		Step #: <u>140</u>		QTY Effective: <u>1</u>		Disposition <u>①</u>		MRB (QSI042) Approval DAS 9 9-89 <u>15-05-10</u>		Completed By <u>Shirley</u> 18-08-10
Description Work Order Deviation										Lead Hand / Supervisor Approval Verification
Qty of X one wearplate hole is drill to big. (.375" instead of .313")										
Scrap and destroy.										
bbs 9 15-05-10 QC / QA Coordinator Approval DAS 9 9-89 <u>15-05-10</u>										
Root Cause		No Re-verification		FAULT CATEGORY						
Environment		☐		☐		☐		☐		☐
Design		☒ Operator		☐		☐		☐		☐
Doc/Data		☐ Offset/Setup		☐		☐		☐		☐
Equip/Tooling		☐ Supplier		☐		☐		☐		☐
Handling/Pre		☐ Training		☐		☐		☐		☐
Material		☐ Use for Testing		☐		☐		☐		☐
Internal Transport		☐ Poor Information		☐		☐		☐		☐
Tribal Knowledge		☐ Rushing		☐		☐		☐		☐
LOA		☐ Product Improvement		☐		☐		☐		☐
Substation		☐ Process Improvement		☐		☐		☐		☐
Past Expiry Date		☐ Manufacturing Process		☐		☐		☐		☐
Misidentified		☐ Past Due		☐		☐		☐		☐
				Pressure/Forced		☐		☐		☐
				Bending		☐		☐		☐
				Centre Not Concentric		☐		☐		☐
				Cracks		☐		☐		☐
				Crimp/Kink/Ripple/Wave		☐		☐		☐
				Cuffs		☐		☐		☐
				Crushing		☐		☐		☐
				Heat Treat		☐		☐		☐
				Wave/Twist in Tube		☐		☐		☐
				Marks/Chatter		☐		☐		☐
				Temperature/Cure		☐		☐		☐
				Set-up		☐		☐		☐
				BOM/Route		☐		☐		☐
				Broken/Damage/Defect		☐		☐		☐
				Inspection Incomplete/Unqualified		☐		☐		☐
				Contamination		☐		☐		☐
				Countersink		☐		☐		☐
				Cut Too Short		☐		☐		☐
				Instructions Incomplete/Unclear		☐		☐		☐
				Drill Holes		☒		☐		☐
				Power Loss/Surge		☐		☐		☐
				Folio/Program		☐		☐		☐
				Grain		☐		☐		☐
				Weld		☐		☐		☐
				Wrong Stock Pulled		☐		☐		☐
				Out of Sequence		☐		☐		☐
				Off-set		☐		☐		☐
				Mislabeled		☐		☐		☐
				Fit/Function		☐		☐		☐
				Misaligned/off center		☐		☐		☐
				Positioned Wrong		☐		☐		☐
				Outside Dimensions		☐		☐		☐
				Over/Under tolerance		☐		☐		☐
				Part Incorrect		☐		☐		☐
				Part Lost/Missing		☐		☐		☐
				Part Moved		☐		☐		☐
				Drawing		☐		☐		☐
				Finish		☐		☐		☐
				Misread		☐		☐		☐
				Turning Sequence		☐		☐		☐
				OTHER :						

Job BOM				
Part / Item	Component Name	Quantity	Operation	Container
D2500-1-190	Ext'n -1" Beam Tube 4"	1 Ea (1 ea)	90-Start up Operation	507162
D2579	Crossbolt Spacer	2 Ea (2 ea)	140-Skidtubes	
D3885-1	Standard Web	1 Ea (1 ea)	140-Skidtubes	15461681
D2855-5	Cap	1 Ea (1 ea)	160-Skidtubes	5066894
D3681-1	Spacer	12 Ea (12 ea)	160-Skidtubes	
D3903-1	Spacer	12 Ea (12 ea)	160-Skidtubes	
ALS4-1032-130	Rivnut	33 Ea (33 ea)	240-HandFinish	
ALS4-1032-225	Rivnut	1 Ea (1 ea)	240-HandFinish	
AN3C4A	Bolt	6 Ea (6 ea)	240-HandFinish	
AN3C5A	Bolt	26 Ea (26 ea)	240-HandFinish	
D2855-3	Cap	1 Ea (1 ea)	240-HandFinish	
D3492-5	Plug	24 Ea (24 ea)	240-HandFinish	
D3672-1	Washer, Phenolic	2 Ea (2 ea)	240-HandFinish	
D3847-1	Wearpad	5 Ea (5 ea)	240-HandFinish	
D3847-11	Wearpad	1 Ea (1 ea)	240-HandFinish	
MS24694-C52	Screw	2 Ea (2 ea)	240-HandFinish	
NAS1149C0332R	Washer	32 Ea (32 ea)	240-HandFinish	
NAS1611-005	O-Ring	24 Ea (24 ea)	240-HandFinish	

Job Allocations				
Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D2500-1-190	1	85	0
140-Skidtubes	D2579	2	89	0
	D3885-1	1	16	0
160-Skidtubes	D2855-5	1	94	0
	D3681-1	12	248	0
	D3903-1	12	37	0
240-HandFinish	ALS4-1032-130	33	7,007	0
	ALS4-1032-225	1	1,148	0
	AN3C4A	6	2,521	0
	AN3C5A	26	189	0
	D2855-3	1	9	0
	D3492-5	24	26	0
	D3672-1	2	1,071	0
	D3847-1	5	28	0
	D3847-11	1	19	0
	MS24694-C52	2	61	0
	NAS1149C0332R	32	4,896	0
	NAS1611-005	24	235	0

Part Specifications

Specifications could not be found.

Plex 3/23/18 9:20 AM Dart.Gagnon.Michelle

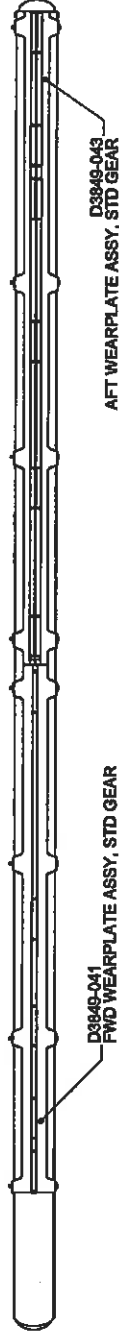
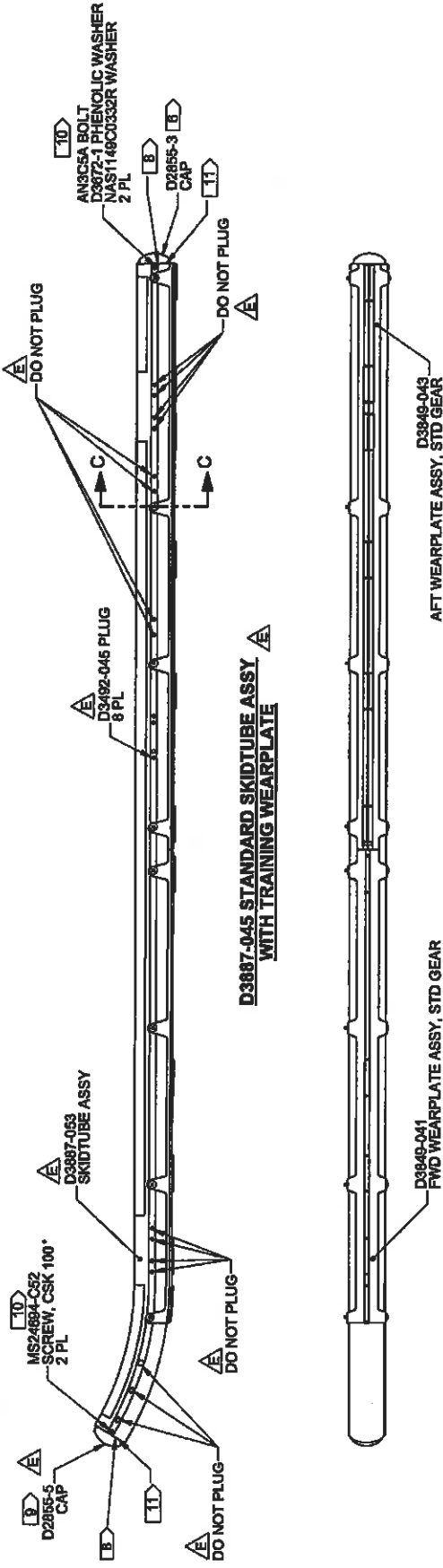
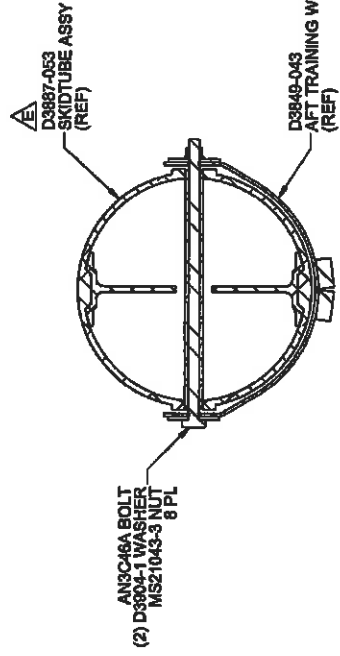
WITHOUT
WORK ORDER
NO. 174918
MAR 7 7 2016

①

8

1

ITEM	QTY -445	P/N	DESCRIPTION
	X	D3887-045	STANDARD SKIDTUBE ASSY WITH TRAINING WEARPLATE
1	1	D2855-3	CAP ASSY
2	1	D2855-5	CAP ASSY
3	8	D3492-046	PLUG
4	2	D3872-1	PHENOLIC WASHER
5	1	D3849-041	FWD WEARPLATE ASSY, STD GEAR
6	1	D3849-043	AFT WEARPLATE ASSY, STD GEAR
7	1	D3887-053	SKIDTUBE ASSY
8	10	D3804-1	WASHER
9	1	ALS4-1032-225	INSERT
10	8	AN3C46A	BOLT
11	2	AN3C5A	BOLT
12	8	MS21043-3	NUT, SELF-LOCKING
13	2	MS24894-C62	SCREW, CSK 100°
14	2	MS2148C0332R	WASHER



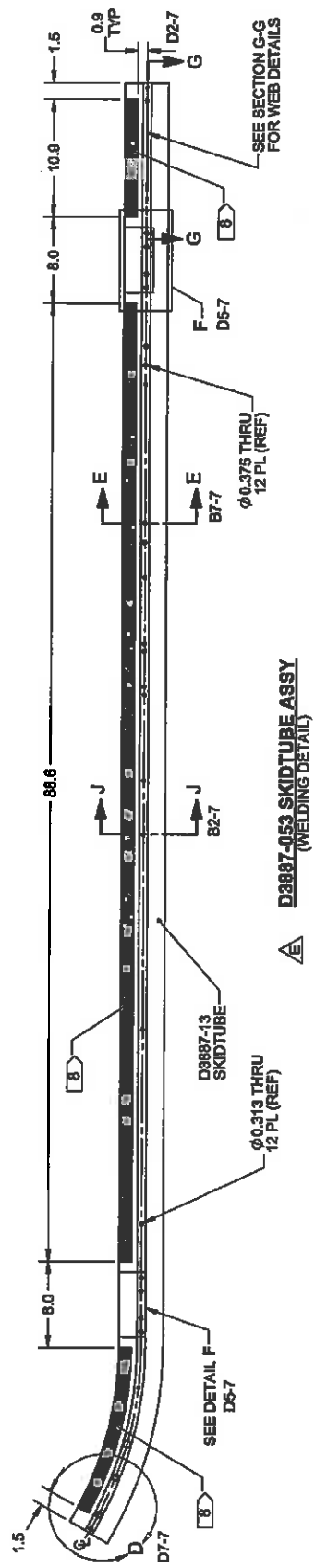
- NOTES:
- 1) MATERIAL: N/A
 - 2) FINISH: NONE
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: N/A
 - 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D3887-045" AND BATCH NUMBER PER QSI 044 6.4 ON THE ID OF THE TUBE, BEFORE INSTALLING THE AFT D2855-3 CAP
 - 7) WEIGHT: 38.1 lbs
 - 8) RELIEVE INNER RIDGE OF EXTRUSION, AS NEEDED, TO ALLOW FOR INSTALLATION OF D2855-3 AND D2855-5 CAP ASSY, ALODINE BARE MATERIAL
 - 9) USE D3887-053 SKIDTUBE ASSY TO LOCATE AND BACKDRILL UNDRILLED INSERT HOLE INTO D2855-5 CAP. OPEN HOLE TO Ø0.297. ALODINE BARE MATERIAL AND INSTALL ALS4-1032-225 (OR ALS7-1032-225, OR AKS7-1032-225, OR AKS4-1032-225) INSERT ON INSIDE OF CAP.
 - 10) SEAL FASTENERS WITH SIKAFLEX -241/291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT
 - 11) SEAL MATING SURFACES WITH SIKAFLEX -241/291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT

RELEASED
2017-05-08

DESIGN	RF	WV	DART AEROSPACE USA, INC.
DRAWN	RF	WV	ELSGINE, OR
CHECKED	RF	WV	D3887
MFG. APPR.	DD	HS	TITLE
APPROVED	HS	DS	A119 STD SKIDTUBE ASSY
DE APPR.	DS	DS	SCALE
DATE	17.02.03	DS	NTS

COMPANY: DART AEROSPACE USA, INC.
10000 W. 10TH AVENUE, SUITE 1000, DENVER, CO 80202
TEL: 303.751.1000 FAX: 303.751.1001
WWW.DARTAEROSPACEUSA.COM

ITEM	QTY -053	P/N	DESCRIPTION
	X	D3887-053	SKIDTUBE ASSY
1	2	D2579	CROSS BOLT SPACER
2	12	D3881-1	CROSS BOLT SPACER
3	1	D3885-1	STANDARD WEB
4	1	D3887-13	SKIDTUBE
5	12	D3903-1	CROSS BOLT SPACER

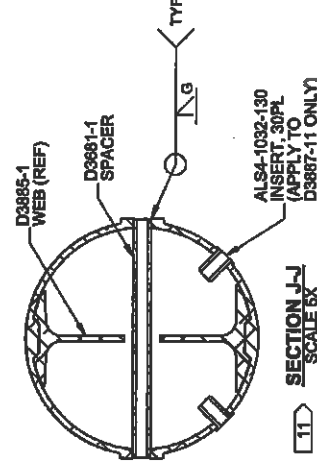
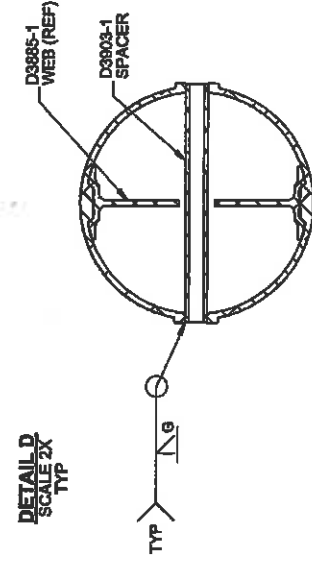
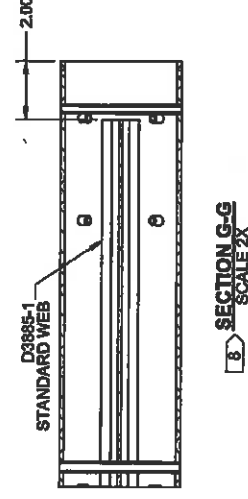


D3887-053 SKIDTUBE ASSY
(WELDING DETAIL)

- NOTES:
- 1) MATERIAL: N/A
 - 2) FINISH: POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) DIMENSIONS: UNLESS OTHERWISE NOTED
 - 5) BREAK: SHARP EDGES: N/A
 - 6) IDENTIFICATION: IDENTIFY AT NEXT ASSEMBLY
 - 7) WEIGHT: N/A
 - 8) AFTER APPLICATION OF FINISH, PAINT TOP SURFACE OF SKIDTUBE WITH MIL-W-5044 ANTI-SKID PAINT (WING WALK) AS INDICATED TO 0.50 ABOVE LOCATION RIDGE, PER QSI 005 SECTION 4.4

RELEASED
R 2017-05-08

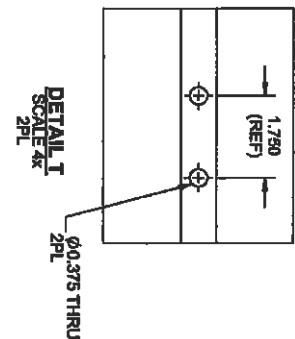
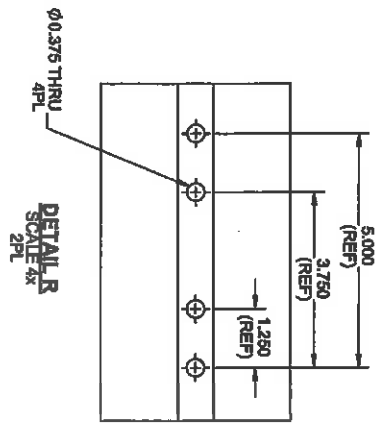
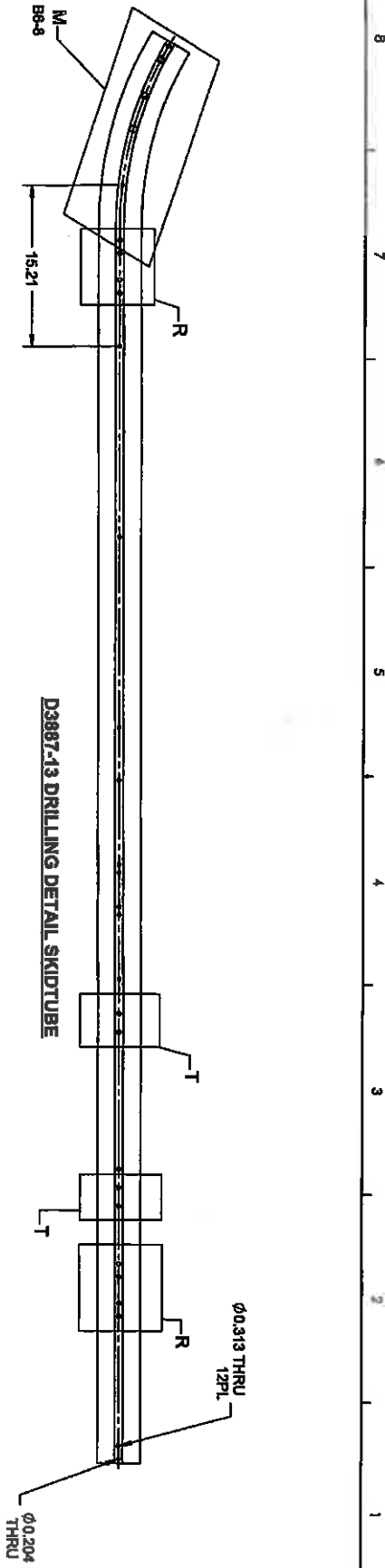
DESIGN	RF	RF	DART AEROSPACE USA, INC.
DRAWN	WK	WK	EUGENE, OR
CHECKED	RF	RF	DRAWING NO.
MFG. APPR.	DD	DD	D3887
APPROVED	HS	HS	TITLE
DATE	17.02.03	17.02.03	A119 STD SKIDTUBE ASSY
SCALE	NTS	NTS	SCALE
REV. E	REV. E	REV. E	REV. E
SHEET 8 OF 11	SHEET 8 OF 11	SHEET 8 OF 11	SHEET 8 OF 11



11 SECTION J-J
SCALE 6X
TYP
(FOR 12X Ø0.313 HOLES
PER SKIDTUBE)

DESIGN	RF	DART AEROSPACE USA, INC.	
DRAWN	WK	EUGENE, OR	
CHECKED	RF	DRAWING NO. D3887	
MFG. APPR.	DD	REV. E	
APPROVED	HS	SHEET 7 OF 11	
DE APPR.	DS	SCALE	
DATE	17.02.03	A119 STD SKIDTUBE ASSY	
		NTS	

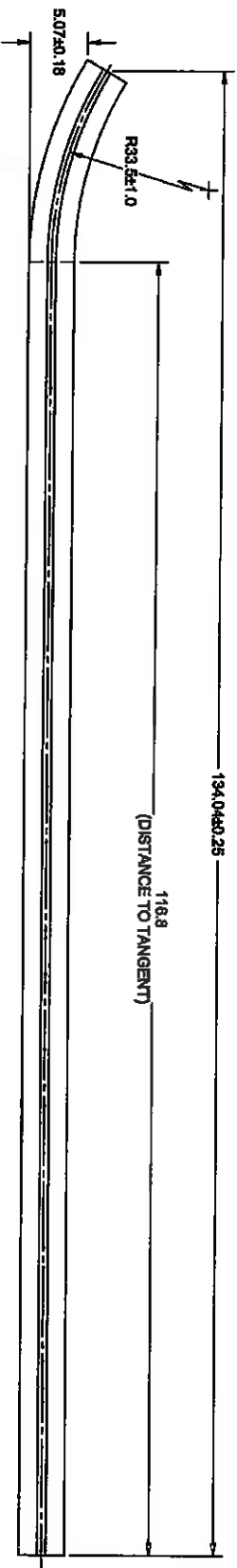
RELEASED
2017-05-08
NO APPROVED



- NOTES:
- 1) MATERIAL: MAKE -13 FROM -1 BEND DETAIL
 - 2) FINISH: CHEMICAL CONVERSION COAT PER DART OSI 005 4.1
 - 3) TOLERANCES: PER DART OSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: IDENTIFY AT FINAL ASSEMBLY
 - 7) WEIGHT: N/A

RELEASED
2017-05-08
APPROVED

DESIGN	RF	DART AEROSPACE USA, INC.
DRAWN	WKC	EUGENE, OR
CHECKED	RF	DRAWING NO. D3887
MFG. APPR.	DD	REV. 5
APPROVED	HS	SHEET 9 OF 11
DATE	17.02.03	SCALE NTS
A119 STD SKIDTUBE ASSY		



D3887-1 BEND DETAIL SKIDTUBE

- NOTES:
- 1) MATERIAL: MAKE -1 BEND DETAIL FROM -3 PILOT HOLE DETAIL.
 - 2) FINISH: N/A
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SQUARED EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: IDENTIFY AT FINAL ASSEMBLY
 - 7) WEIGHT: N/A
 - 8) DAMAGE TOLERANCE ON FWD BEND: THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 6.6 INCHES ABOVE THE GROUND. IT IS ACCEPTABLE TO POLISH OUT GOUGES UP TO 0.020" DEEP IN THE BENT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.190" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.

RELEASED
2017-05-08
APPROVED

DESIGN	RF	DART AEROSPACE USA, INC.
DRAWN	WVK	ENGINEER
CHECKED	RF	DRAWING NO.
MFG. APPR.	DD	D3887
APPROVED	HS	TITLE
DE APPR.	DS	A119 STD SKIDTUBE ASSY
DATE	17.02.03	SCALE
		MKS

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